

We Claim:

1. An ultrasonic cleaning and washing apparatus comprising:
a degassing means for providing degassed water for washing prior to initiating a washing and cleaning cycle;
a washing tank utilizing said degassed water and which accommodates at least one cleaning item;
an ultrasonic means to generate pulses of ultrasonic energy in said degassed water of said washing tank;
at least one water pumping means for circulating the water of said washing tank;
a water jetting means for directing a plurality of jets of water towards the at least one cleaning item to halt circulation and motion of water in said washing tank and concurrently to bring the rotation and motion of said at least one cleaning item to a halt within the shortest period of time;
a holding means for holding the at least one cleaning item oriented in the water of said washing tank so as to facilitate passage of ultrasonic energy through the water to optimally penetrate said at least one cleaning item immersed therein; and
a control means for programming and executing relevant process parameters in the operation of said ultrasonic cleaning apparatus for cycling said at least one cleaning item in an appropriate cleaning cycle.
2. An ultrasonic cleaning and washing apparatus as in claim 1, further providing:
a cover for said washing tank to prevent air intrusion and to contain said at least one cleaning item in a submerged position when said washing tank is filled with water.
3. A method for cleaning and washing at least one cleaning item comprising the steps of:
degassing a quantity of water in a degassing water tank prior to introducing said quantity of water into a washing tank;
placing said at least one cleaning item in a holding means within said washing tank;
supplying said quantity of water from said degassing water tank to said washing tank to a level enabling said holding means containing said at least one cleaning item to be submerged

in said quantity of water;
adding given amounts of prescribed mixtures of active cleaning agents to said washing tank to enhance cleaning, disinfecting and decontaminating of said at least one cleaning item;
introducing ultrasonic energy into the water of said washing tank in a cleaning cycle of alternating cycles of cleaning and washing;
subjecting said at least one cleaning item to said alternating cycles of cleaning and washing by selecting relevant and suitable process parameters from operating controls provided on said apparatus itself;
creating turbulence in said water in said washing tank in said washing cycle of said alternating cycles so as to prevent air intrusion and to cause said at least one cleaning item in said washing tank to be agitated and to revolve, thereby exposing all surfaces to cleaning action;
removing said at least one cleaning item from said washing tank; and
rinsing the treated and cleaned said at least one cleaning item under tap water.

4. The apparatus of claim 1, further comprising a cover for said washing tank to prevent air intrusion and to contain said at least one cleaning item in a submerged position when said washing tank is filled with water.

5. The apparatus of claim 1 wherein said degassing means comprises a water degassing tank for storing and degassing water provided to said cleaning and washing apparatus; a water circulating pump for circulating water to and from said tank; a vacuum pump for providing degassing of said tank chamber; a vacuum gage for monitoring the degassing process; at least one solenoid valve for evacuating and inputting air to said degassing tank; a water level sensor for monitoring the level of the water in said degassing tank; and input and output solenoid valves to enable controlled operation of the entry and transfer of water to and from said degassing means.

6. The apparatus of claim 1 wherein said ultrasonic means comprises at least one array of ultrasonic transducers positioned in close proximity to said washing tank for creating turbulence in said water provided to said washing tank.

7. The apparatus of claim 1 wherein said control means comprises an electromechanical control system.
8. The apparatus of claim 1 wherein said washing tank contains a basket for securely accommodating said at least one cleaning item in a submerged state during a washing cycle.
9. The apparatus of claim 8 wherein said basket is removable so as to unload said at least one cleaning item from said washing tank.
10. The apparatus of claim 8 wherein said basket is rotatable within said washing tank so as to provide an unloading means to remove said at least one cleaning item from said washing tank after said at least one cleaning item has been cleaned and washed.
11. The apparatus of claim 10 wherein said unloading means comprises a basket drive unit for lifting out said basket from said washing tank in a manner to release said at least one cleaning item from said apparatus.
12. The method of claim 3 further comprising the steps of:
applying a vacuum to said washing tank containing said at least one cleaning item to enhance the cleaning process and improve the effectiveness of said active cleaning agents added to said water in said washing tank; and
providing an unloading means for removing said at least one cleaning item from said washing tank.
13. The method of claim 3 wherein said at least one cleaning item comprises plants characterized as at least one of the conditions of wilted, bent, and non-fresh.
14. The method of claim 3 wherein said degassing means provides degassed water for washing on a continuous basis to said washing tank.